

REMARKS/ARGUMENTS

1. Claim Objections:

Claim 34 is objected because of the following informalities: The drain electrode does not traverse a spacing between the first shielding layer and the second shielding layer as
5 claimed.

Response:

Applicant believes that a misunderstanding occurs in claim 34, and explains what the claimed drain electrode is as follows.

10 Please refer to Fig. 5 and paragraph [0042]. As described in [0042], the second metal layer that forms the pattern of data lines 34a and 34b, source electrode S, and **drain electrode D** are additionally patterned **as a repair line 54**. Preferably, the repair line 54 traverses a spacing between the first floating BM shielding layer 42A and the second floating BM shielding layer 42. Therefore, the claimed "drain electrode" refers to the repair line 54
15 shown in Fig. 5, not the pixel electrode considered by Examiner.

2. Claim Rejections 35 USC § 103

Claims 1, 2, 29, and 32-35 are rejected under 35 U.S.C 103(a) as being unpatentable
20 over Applicant's admitted prior art (APA) in view of Song USPAT 6,788,356 (herein after Song). Reasons of rejection were cited on pages 6-8 of the above-mentioned Office action.

Response:

Referring to claim 1

25 Please refer to claim 1 and Fig.6 of the present invention. The pixel area of each liquid crystal display has a pixel electrode, a switching element 38, a first shielding layer 42A, and a second shielding layer 42B. **The width of the first shielding layer 42A is larger than that of the second shielding layer 42B.** The wider first shielding layer 42A is utilized

to effectively reduce light leakage.

Examiner notes that Song discloses an LCD where the width of the first light shielding layer is larger than the width of the second shielding layer (col. 5, lines 25-62) to minimized light reflected by the wirings. However, Applicant read the paragraph cited by
5 Examiner and has a different explanation from Examiner. According to col. 5, lines 25-33, light leakage resulting from the light irradiated at an angle under the data lines 62 is blocked by means of *forming black matrix 94 under the data lines 62 of a width greater than that of the data lines 62*. In other words, the width of black matrix 94 is determined and proportional to the width of the data line 62. However, referring to Fig. 1 of Song, *the width*
10 *of the data line 62 on the left side seems to have the same width as the other data line 62 on the right side*. Since the width of the black matrix is determined by the overhead data lines, the width of the black matrix 94 on the left side should be as large as the width of the other black matrix 94 on the right side. Besides, in col. 5, lines 42-50, Song discloses that distance between the color filters 210 is less than 4 μ m for minimizing the light reflected by
15 the gate lines and the data lines. Therefore, Song never discloses that the two light shielding layers in the same pixel have different width or the feature of “one of the light shielding layers has a larger width than the other light shielding layers in the same pixel.

In addition, the gate lines 32a and 32b and the first light shielding layer 42A and the second light shielding layer 42B are formed simultaneously and disposed on the same plane
20 (the glass substrate 44). However, the black matrix 94 is disposed under the data line 62. Therefore, the combination of APA and Song does not teach all limitations in the claim, and claim 1 should be patentable over APA and Song. Reconsideration of claim 1 is politely requested.

25 Referring to claim 2, 29, and 32

Claims 2, 29, and 32 are dependent upon claim 1, and should be allowable if claim 1 is allowed. Reconsideration of claims 2, 29, and 32 is politely requested.

Referring to claim 33

The paragraph cited by Examiner discloses that the width (a) of the black matrix 94 is determined by the sum of a width of the data lines 62 and twice each of the distances (b) of an overlapping portion of the pixel electrodes 82 and the black matrix 94 and the distances (c) from the pixel electrodes 82 to the data lines 62. Song never discloses that:

- 1) The pixel has two light shielding layer of different width; and
- 2) The distance between the first shielding layer and the first data line is smaller than the distance between the second shielding layer and the second data line.

In addition, claim 33 is dependent on claim 1, and should be allowable if claim 1 is allowed. Reconsideration of claim 1 is politely requested.

Referring to claim 34

Claim 34 refers to the second preferred embodiment of the present invention shown in Fig. 5. **The drain electrode of the TFT 38** is patterned as a repair line 54, and is used as a replacement circuit when a broken circuit occurs at data line 32b. Although, Song discloses that **the black matrix 92 or 94** may be used as a replacement circuit when a broken circuit occurs, Song does not disclose that the drain electrode of the TFT can be used as a repair line. In addition, the drain electrode of Song does not traverse a spacing between the first light shielding layer and the second light shielding layer. Accordingly, claim 34 is patentable over Song and APA. Reconsideration of claim 34 is politely requested.

Referring to claim 35

Claim 35 includes a feature of “the first data line 34a having an extension portion which is overlapped with the first light shielding layer 42A”. In addition, the first light shielding layer is electrically connected to the gate line 32b.

Song never discloses that the data line has an extension portion that is overlapped with the black matrix 94. On the other hand, APA never discloses that the first light shielding layer is connected to the extension portion of the data line. Therefore, the combination of

Song and APA does not disclose all the limitations in claim 35. Claim 35 should be patentable over Song in view of APA. Reconsideration of claim 35 is politely requested.

5 3. ***Claim Rejections 35 USC § 103***

Claims 3, 4, and 31 are rejected under 35 U.S.C 103(a) as being unpatentable over APA in view of Song, as applied to claim 1 above, and further in view of Okada et al. (USPAT 6,633,360, hereinafter Okada). Reasons of rejection were cited on pages 8-9 of the above-mentioned Office action.

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Response:

APA discloses that a pixel area of conventional TFT-LCD device has a first light shielding layer 22A and a second light shielding layer 22B. However, the first light shielding layer 22A and the second light shielding layer 22B are not only disposed apart from the gate line 12a and 12b, but also disconnected to the gate line 12a. Examiner notes that extending the light shielding 22a of APA to connect to gate line 12a would result in overlapping with the extending portion of data line 14a. However, the extending of the light shielding 22 may rather connect to the gate line 12b The connection between the first light shielding layer 22A and the gate line 12a or the second light shielding layer 22B and the gate line 12a is a hindsight based on the Applicant's disclosure. MPEP section 2142 describes, "The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." In addition, claims 3, 4, and 31 are dependent upon claim 1, and should be allowable if claim 1 is found allowable. Reconsideration of claims 3, 4, and 31 is politely requested.

4. ***Claim Rejections 35 USC § 103***

Claims 5 and 6 are rejected under 35 U.S.C 103(a) as being unpatentable over APA in view of Song, as applied to claim 1 above, and further in view of Watanabe et al. (USPAT 5,859,677, hereinafter Watanabe). Reasons of rejection were cited on pages 9-10 of the above-mentioned Office action.

Response:

Claims 5 and 6 are dependent upon claim 1, and should be allowable if claim 1 is found allowable. Reconsideration of claims 5 and 6 is politely requested.

5. ***Claim Rejections 35 USC § 103***

Claims 7 and 32 are rejected under 35 U.S.C 103(a) as being unpatentable over APA in view of Song. Reasons of rejection were cited on pages 10-11 of the above-mentioned Office action.

Response:

Referring to Fig. 6, the repair line 54 is disposed **across** the first light shielding layer 42A and the second light shielding layer 42B. The repair line 54 is perpendicular to the first light shielding layer 42A and the second light shielding layer 42B. When the repair line 54 is used as a replacement circuit, the repair line 54 is electrically connected to the first light shielding layer 42A and the second light shielding layer 42B.

Examiner notes that the horizontal black matrix 92 and vertical black matrix 94 of Song may be used as a repair line. If the both vertical black matrixes 94 are equivalent to the first light shielding layer 42A and the second light shielding layer 42B, the equivalent of the repair line 54 should be the horizontal black matrix 92. However, when the horizontal black matrix 92 is used for repairing short circuit in area B, **the horizontal black matrix 92 does not cross the vertical black matrixes 94.** Besides, the repair line 54 is the drain

electrode of the TFT 38. As a result, it is non-obvious that the pixel of the present invention has a repair line across the first light shielding layer and the second light shielding layer.

In addition, claims 7 and 32 are dependent upon claim 1, and should be allowable if claim 1 is found allowable. Reconsideration of claims 7 and 32 is politely requested.

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6. *Claim Rejections 35 USC § 103*

Claims 1, 2, 29, and 32-35 are rejected under 35 U.S.C 103(a) as being unpatentable over APA in view of Song, and further in view of Watanabe. Reasons of rejection were
10 cited on pages 11-14 of the above-mentioned Office action.

Response:

Referring to claim 1

Please refer to claim 1 and Fig.6 of the present invention. The pixel area of each
15 liquid crystal display has a pixel electrode, a switching element 38, a first shielding layer 42A, and a second shielding layer 42B. **The width of the first shielding layer 42A is larger than that of the second shielding layer 42B.** The wider first shielding layer 42A is utilized to effectively reduce light leakage.

According to col. 5, lines 25-33 of Song, light leakage resulting from the light
20 irradiated at an angle under the data lines 62 is blocked by means of *forming black matrix 94 under the data lines 62 of a width greater than that of the data lines 62*. In other words, the width of black matrix 94 is determined and proportional to the width of the data line 62. However, referring to Fig. 1 of Song, the width of the data line 62 on the left side seems to have the same width as the other data line 62 on the right side. Since the width of the black
25 matrix is determined by the overhead data lines, the width of the black matrix 94 on the left side should be as large as the width of the other black matrix 94 on the right side. Col. 5, lines 42-50 of Song discloses that distance between the color filters 210 is less than 4μm for minimizing the light reflected by the gate lines and the data lines. However, Song never

discloses that the two light shielding layers in the same pixel have different width.

Therefore, the combination of APA, Song, and Watanabe does not teach all limitations in the claim, and claim 1 should be patentable over APA, Song, and Watanabe. Reconsideration of claim 1 is politely requested.

5

Referring to claim 2, 29, and 32

Claims 2, 29, and 32 are dependent upon claim 1, and should be allowable if claim 1 is allowed. Reconsideration of claims 2, 29, and 32 is politely requested.

10 Referring to claim 33

As presented above, Song never discloses that the pixel has two light shielding layer of different width which results in the distance between the first shielding layer and the first data line is smaller than the distance between the second shielding layer and the second data line.

15 In addition, claim 33 is dependent on claim 1, and should be allowable if claim 1 is allowed. Reconsideration of claim 1 is politely requested.

Referring to claim 34

20 As described above, Song does not disclose that the drain electrode of the TFT can be used as a repair line, which traverses a spacing between the first light shielding layer and the second light shielding layer. Accordingly, claim 34 is patentable over Song, APA, and Watanabe. Reconsideration of claim 34 is politely requested.

Referring to claim 35

25 The first data line 34a of the present invention has an extension portion overlapped with the first light shielding layer 42A". In addition, the first light shielding layer is electrically connected to the gate line 32b.

Song never discloses that the data line has an extension portion that is overlapped with

the black matrix 94. On the other hand, APA never discloses that the first light shielding layer is connected to the extension portion of the data line. The extending of the light shielding layer in APA is a hindsight based on Applicant disclosure. Therefore, the combination of Song, APA, and Watanabe does not disclose all the limitations in claim 35.

5 Claim 35 should be patentable over Song in view of APA and Watanabe. Reconsideration of claim 35 is politely requested.

7. Claim Rejections 35 USC § 103

10 Claims 3, 4, and 31 are rejected under 35 U.S.C 103(a) as being unpatentable over APA in view of Song and Watanabe, as applied to claim 1 above, and further in view of Okada. Reasons of rejection were cited on pages 14-16 of the above-mentioned Office action.

15 **Response:**

As described above, the extending of the first light shielding layer 22 or the second light shielding layer 22B for connecting the gate line 12a is a hindsight based on the Applicant's disclosure. Although Okada discloses that the light shielding film is electrically connected to the scanning line. However, Okada does not show that the structure of the pixel area which has a light shielding film electrically connected to the scanning line. In addition, claims 3, 4, and 31 are dependent upon claim 1, and should be allowable if claim 1 is found allowable. Reconsideration of claims 3, 4, and 31 is politely requested.

25 **8. Claim Rejections 35 USC § 103**

Claims 7 and 32 are rejected under 35 U.S.C 103(a) as being unpatentable over APA in view of Song and Watanabe. Reasons of rejection were cited on pages 16-17 of the above-mentioned Office action.

Response:

Referring to Fig. 6, the repair line 54 is disposed across the first light shielding layer 42A and the second light shielding layer 42B. The repair line 54 is **perpendicular to** the first light shielding layer 42A and the second light shielding layer 42B. When the repair line 54 is used as a replacement circuit, the repair line 54 is electrically connected to the first light shielding layer 42A and the second light shielding layer 42B.

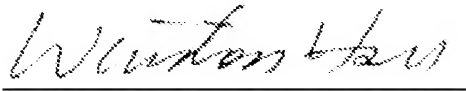
Examiner notes that the horizontal black matrix 92 and vertical black matrix 94 of Song may be used as a repair line. If the both horizontal black matrixes 92 are equivalent to the first light shielding layer 42A and the second light shielding layer 42B, the equivalent of the repair line 54 should be the vertical black matrix 94. When the vertical black matrix 94 of Song is used for repairing short circuit in area C, **the vertical black matrix 94 does not electrically connect to the horizontal black matrixes 94, yet the vertical black matrix 94 cross the horizontal black matrixes 94.** Besides, the repair line 54 is the drain electrode of the TFT 38. Song does not teach that the drain of his pixel structure can be used as a repair line. As a result, it is non-obvious that the pixel of the present invention has a repair line across the first light shielding layer and the second light shielding layer.

In addition, claims 7 and 32 are dependent upon claim 1, and should be allowable if claim 1 is found allowable. Reconsideration of claims 7 and 32 is politely requested.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

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Sincerely yours,



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- 10 Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.)